Co-
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Trans-
disciplinarity
Participation
Stakeholders
User
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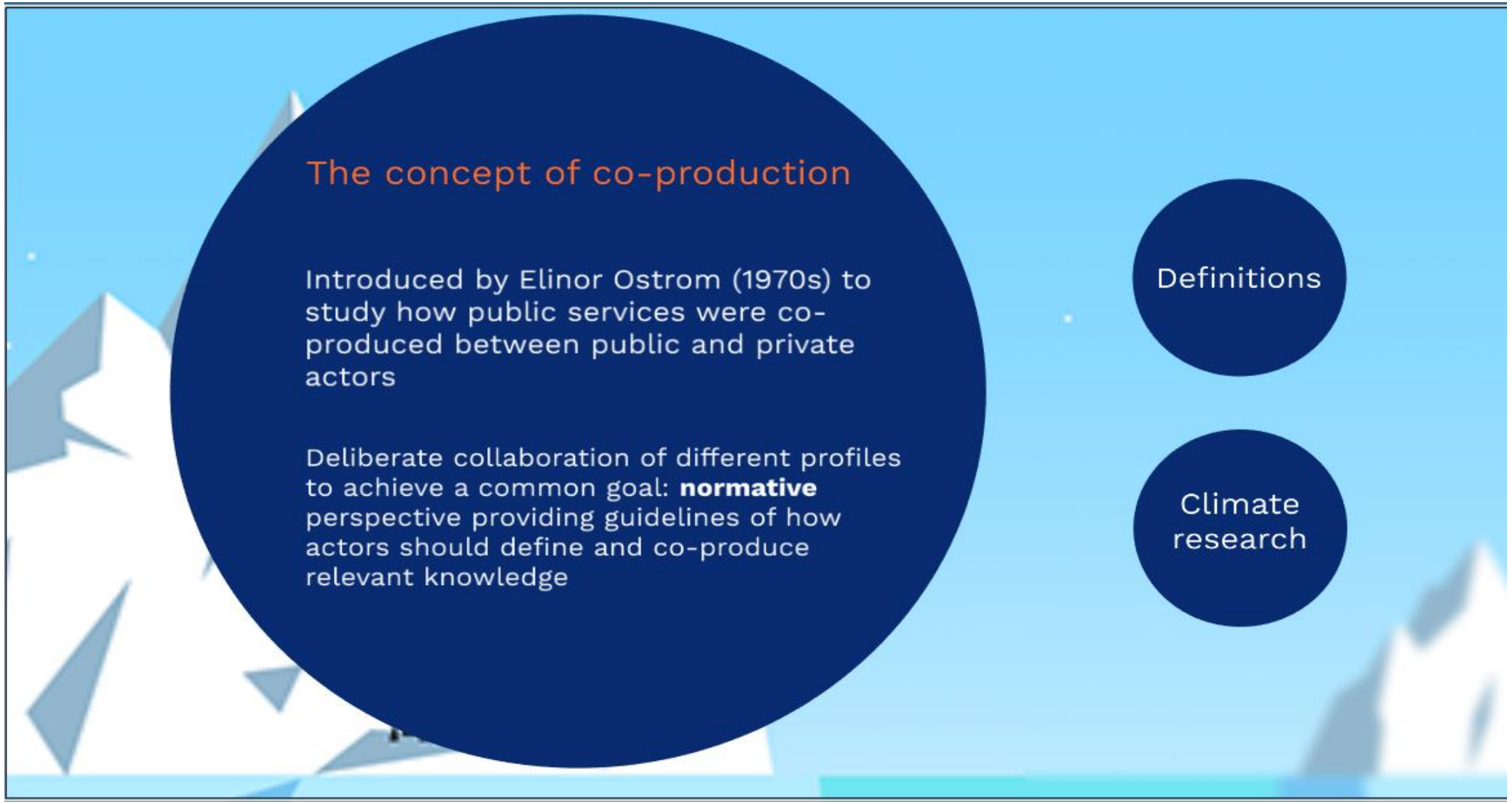
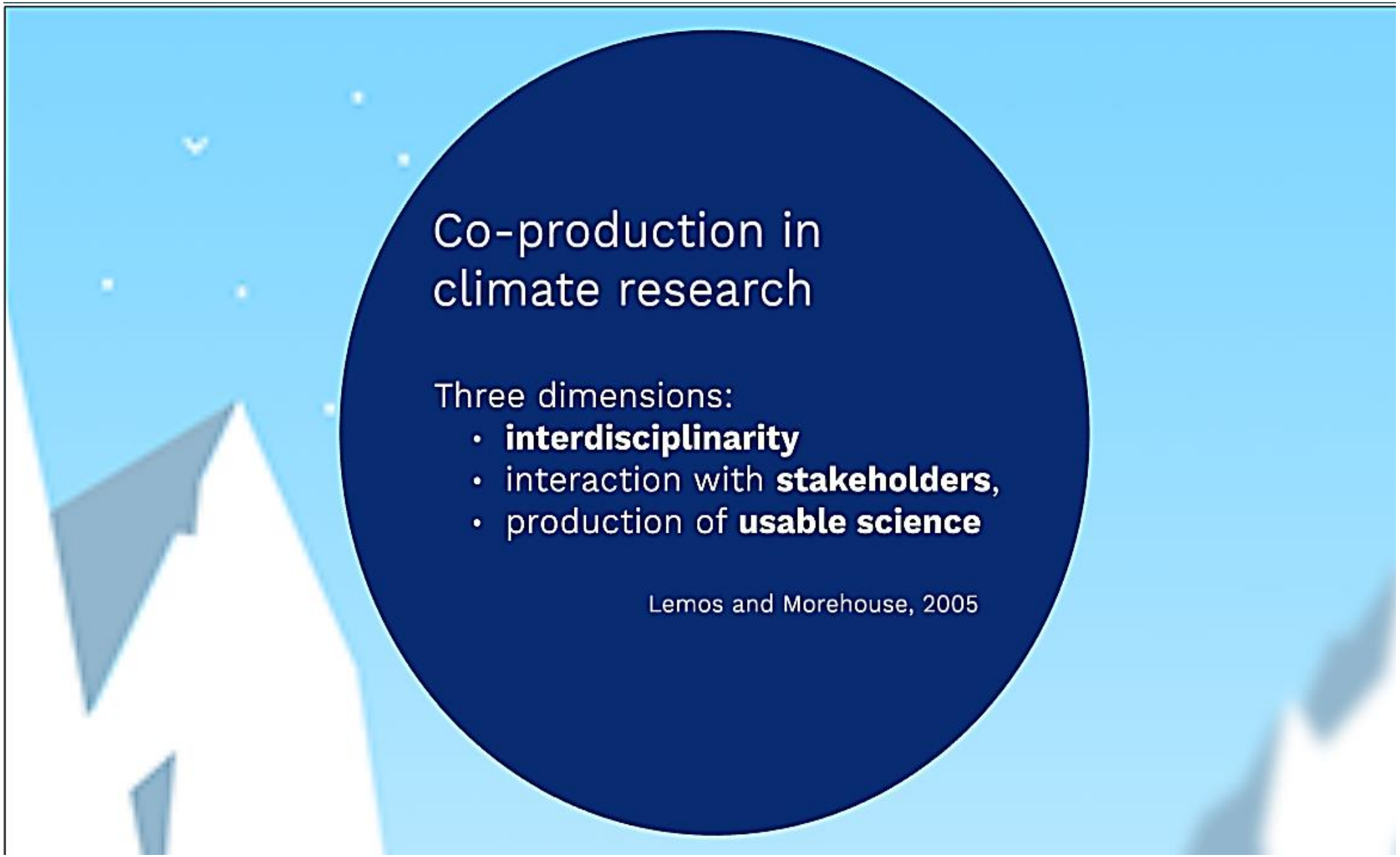
in APPLICATE
Users in
APPLICATE
Climate
services
Let's
play!
Moving the iceberg:
achieving co-production in climate services
Dragana Bojovic & Marta Terrado
KTT team, BSC


The concept of co-production
Introduced by Elinor Ostrom (1970s) to study how public services were co-produced between public and private actors
Deliberate collaboration of different profiles to achieve a common goal: **normative** perspective providing guidelines of how actors should define and co-produce relevant knowledge
Definitions
Climate research

Co-production
"A complex **meeting place** where several different academic traditions and practices converge, overlap, affect each other, come into conflict, or cooperate toward describing and effecting co-production"
Bremer and Meisch, 2017


Co-production in climate research
Three dimensions:
• interdisciplinarity
• interaction with stakeholders,
• production of usable science
Lemos and Morehouse, 2005

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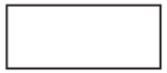
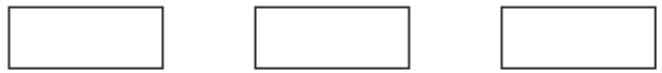
Why we need it?
"An integrating synthesis is not achieved through the accumulation of different brains."
Max-Neef, 2004
Inter-disciplinarity
Trans-disciplinarity

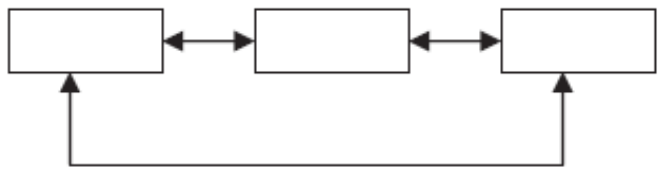
Disciplinarity.
(Specialization in isolation)



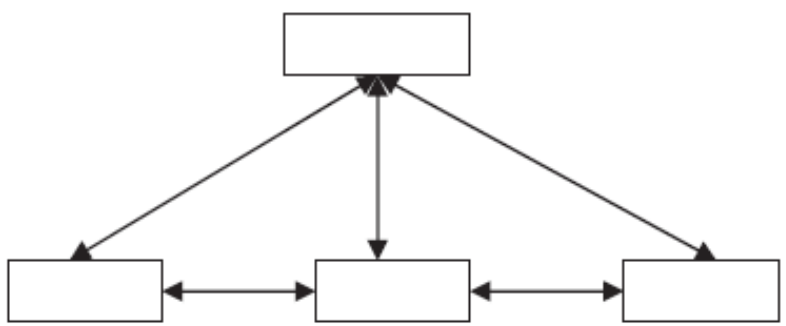
Multidisciplinarity.
(No cooperation)

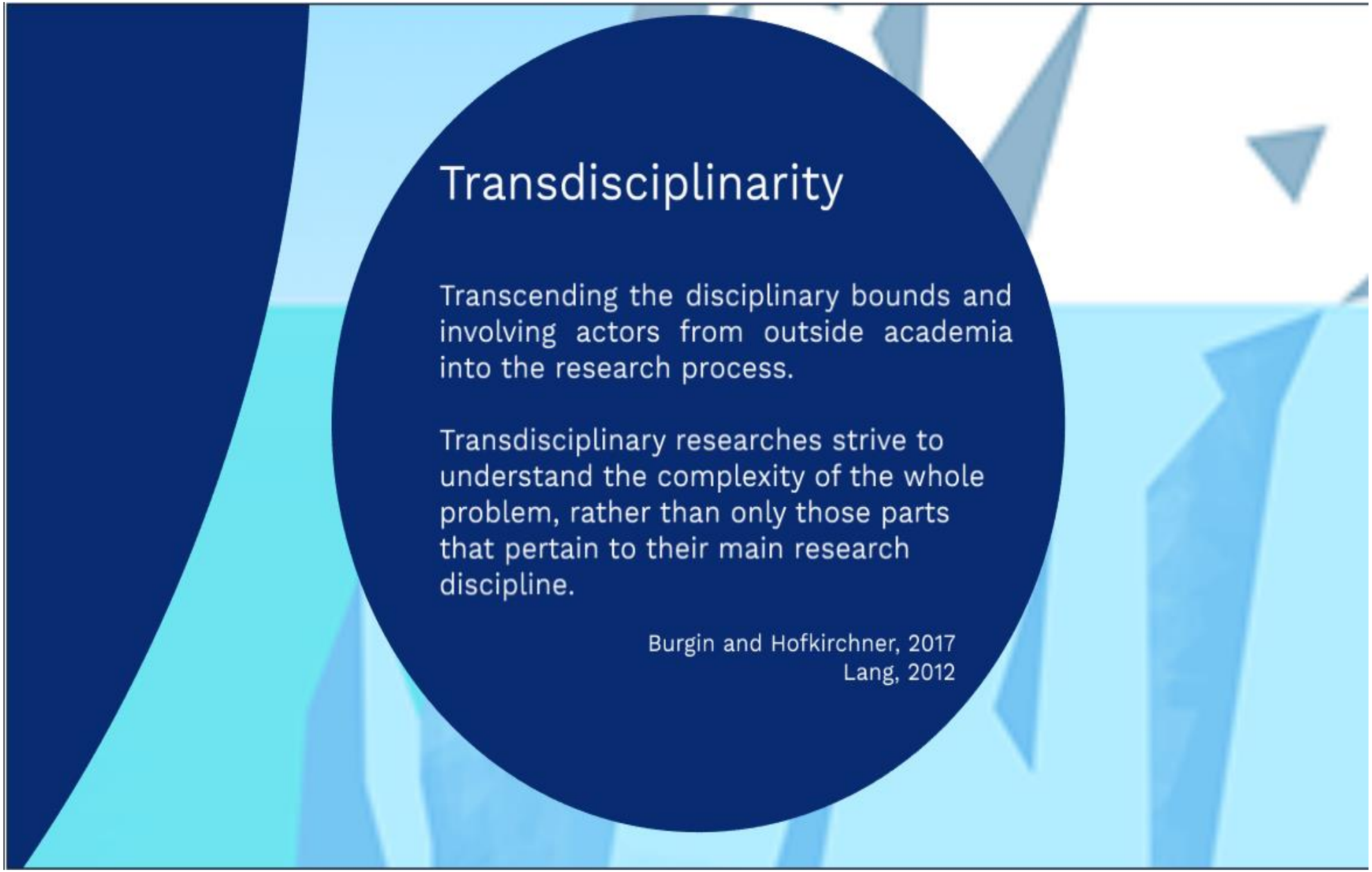


Pluridisciplinarity.
(Cooperation without coordination)



Interdisciplinarity.
(Coordination from higher level concept)




Transdisciplinarity
Transcending the disciplinary bounds and involving actors from outside academia into the research process.
Transdisciplinary researches strive to understand the complexity of the whole problem, rather than only those parts that pertain to their main research discipline.
Burgin and Hofkirchner, 2017
Lang, 2012

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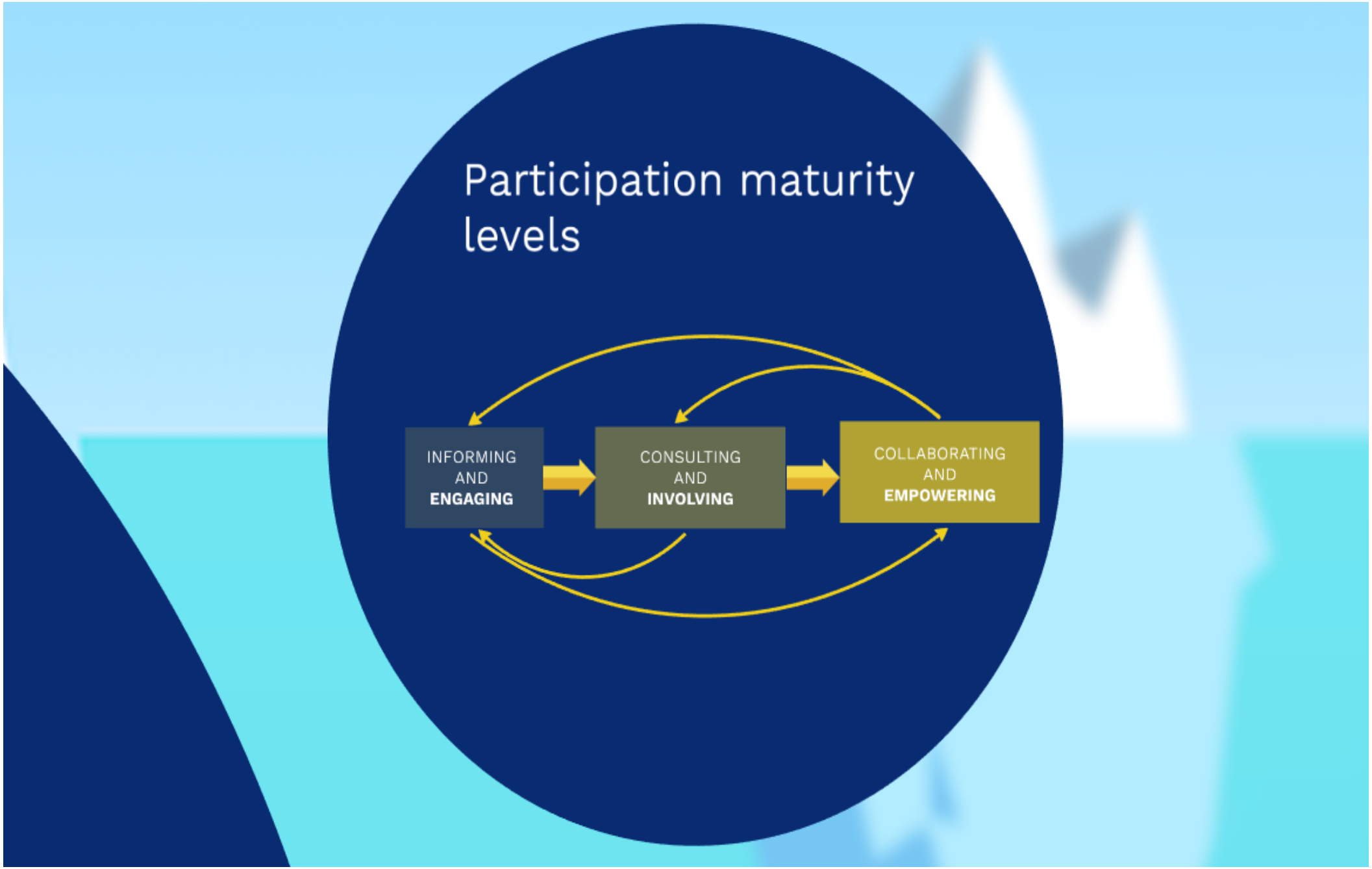
Participation

Long tradition in different scientific disciplines, particularly applicable to environmental research

- Levels
- Methods
- Analysis techniques


Participation maturity levels
INFORMING AND ENGAGING
CONSULTING AND INVOLVING
COLLABORATING AND EMPOWERING

Participation approaches, methods and tools

- **Communication**: social media, websites, communication materials
- **Consultation**: interviews, surveys, focus-groups
- **Collaboration**: case study development

Analysis techniques

Qualitative

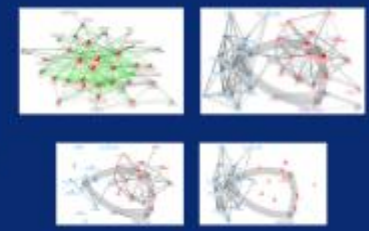
Discourse analysis

Multi-criteria analysis

Quantitative

Statistical analyis

Social network analysis



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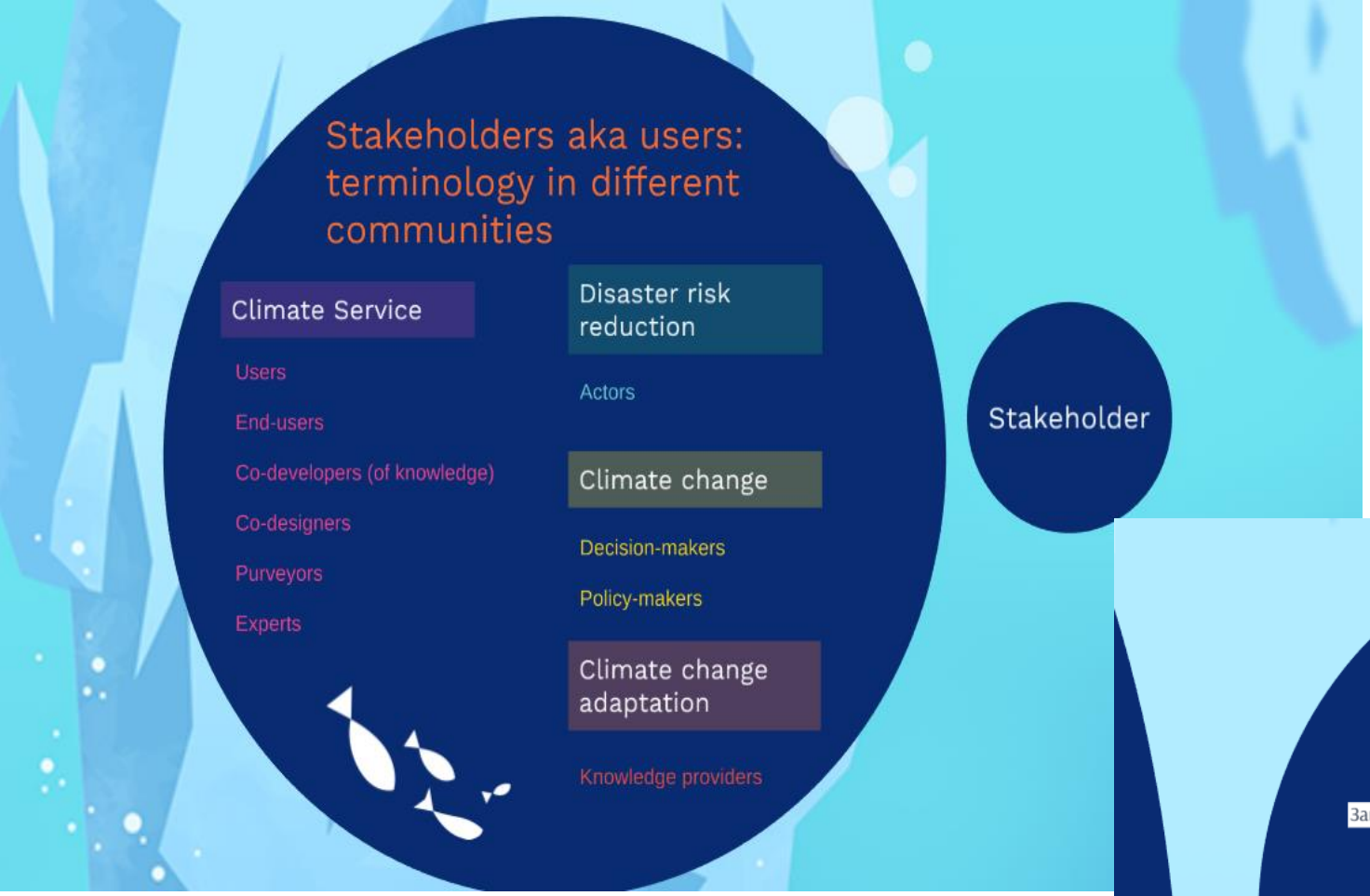
Stakeholders aka users: terminology in different communities
Climate Service
Users
End-users
Co-developers (of knowledge)
Co-designers
Purveyors
Experts
Disaster risk reduction
Actors
Climate change
Decision-makers
Policy-makers
Climate change adaptation
Knowledge providers
Stakeholder

Zainteresovane strane
Parts interessades
Belanghebbendes
Заинтересованные стороны
ステークホルダー
Partie prenante
Stakeholder
Wadau
Засегнатите страни
Parti interessate
Sidosryhmien
أصحاب المصلحة
Partes interesadas
Venexwendine

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Climate services

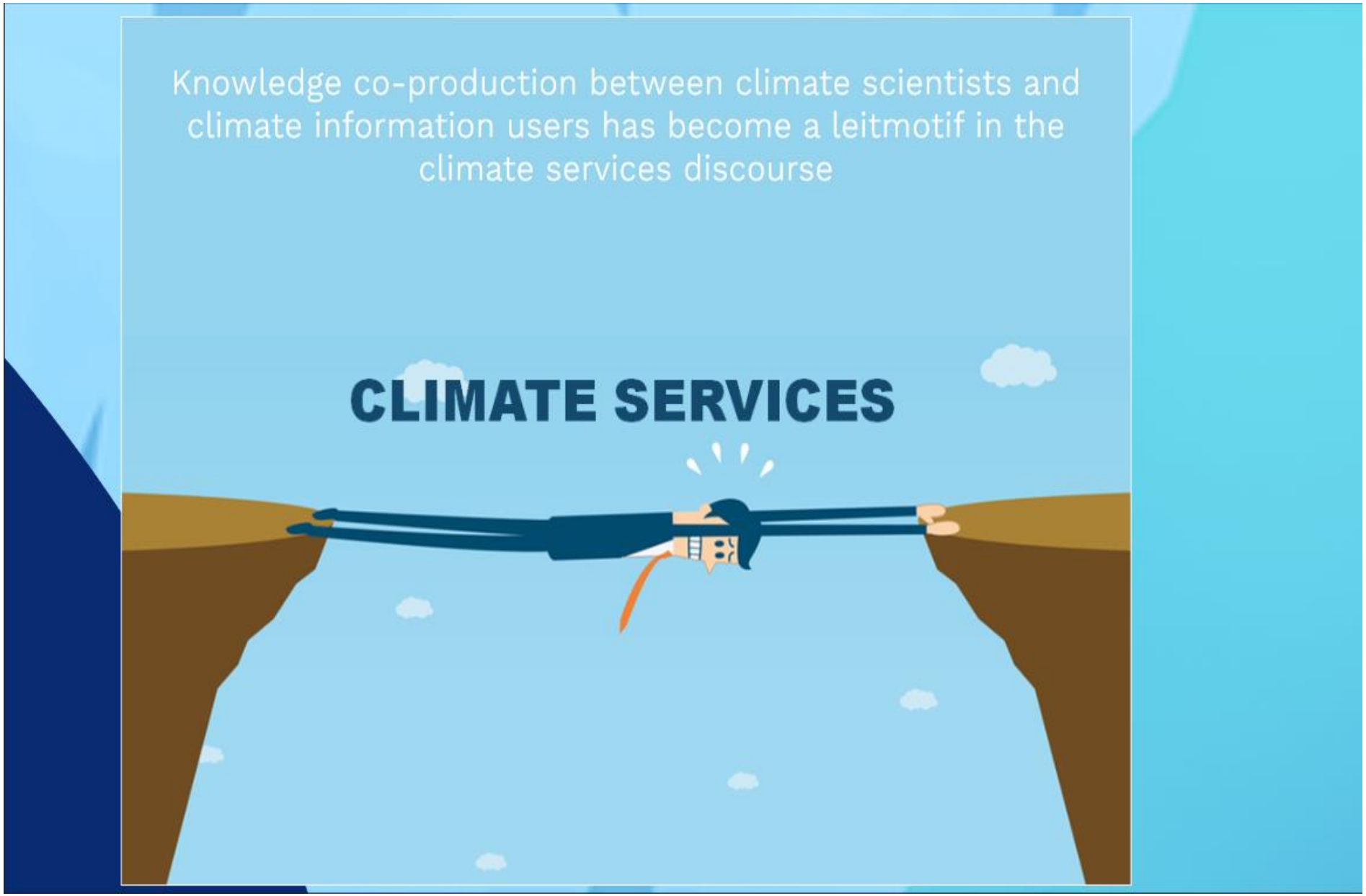
"Provision of climate information to assist decision-making. Services must respond to user needs, must be based on scientifically credible information and expertise, and require appropriate engagement between the users and providers"

Climate information users and other stakeholders provide an external perspective and feedback, ensuring that the products generated are tailored to user needs.

Co-production in CS

Stakeholder typologies

Decision-making context


Knowledge co-production between climate scientists and climate information users has become a leitmotif in the climate services discourse
CLIMATE SERVICES

Different stakeholders

- Different backgrounds
- Different types of decisions
- Different information needs

There is no "one solution that fits all"
This happens even within the same sector

Arctia/Raitio Markus

Icelandic Coast Guard

Siku project

Different decision-making contexts

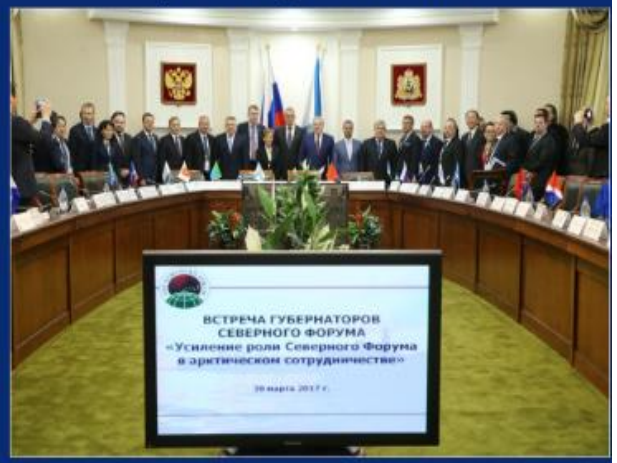
Day to day decisions

Tools for documenting ice conditions, Siku project

Operational and management decisions

Hans Hederström, CSMART

Regulatory and planning decisions



Northern Forum Governors meeting 2017, Mikhail Pogodaev

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Scientific community and international organisations

advanced users able to indicate the gaps in the scientific knowledge

Mikhail Pogodaev

Public and private sector

can benefit from enhanced predictive capacity across time scales

Command Polarstern

Society at large

including the general public and local communities who possess traditional knowledge

Anders Oskal

How we collaborate with stakeholders in APPLICATE

We use different approaches to engage, inform and empower stakeholders to adapt to Arctic changes and their far-reaching impacts on the environment and communities

User Group

Meeting and workshops

Case studies development

Blog

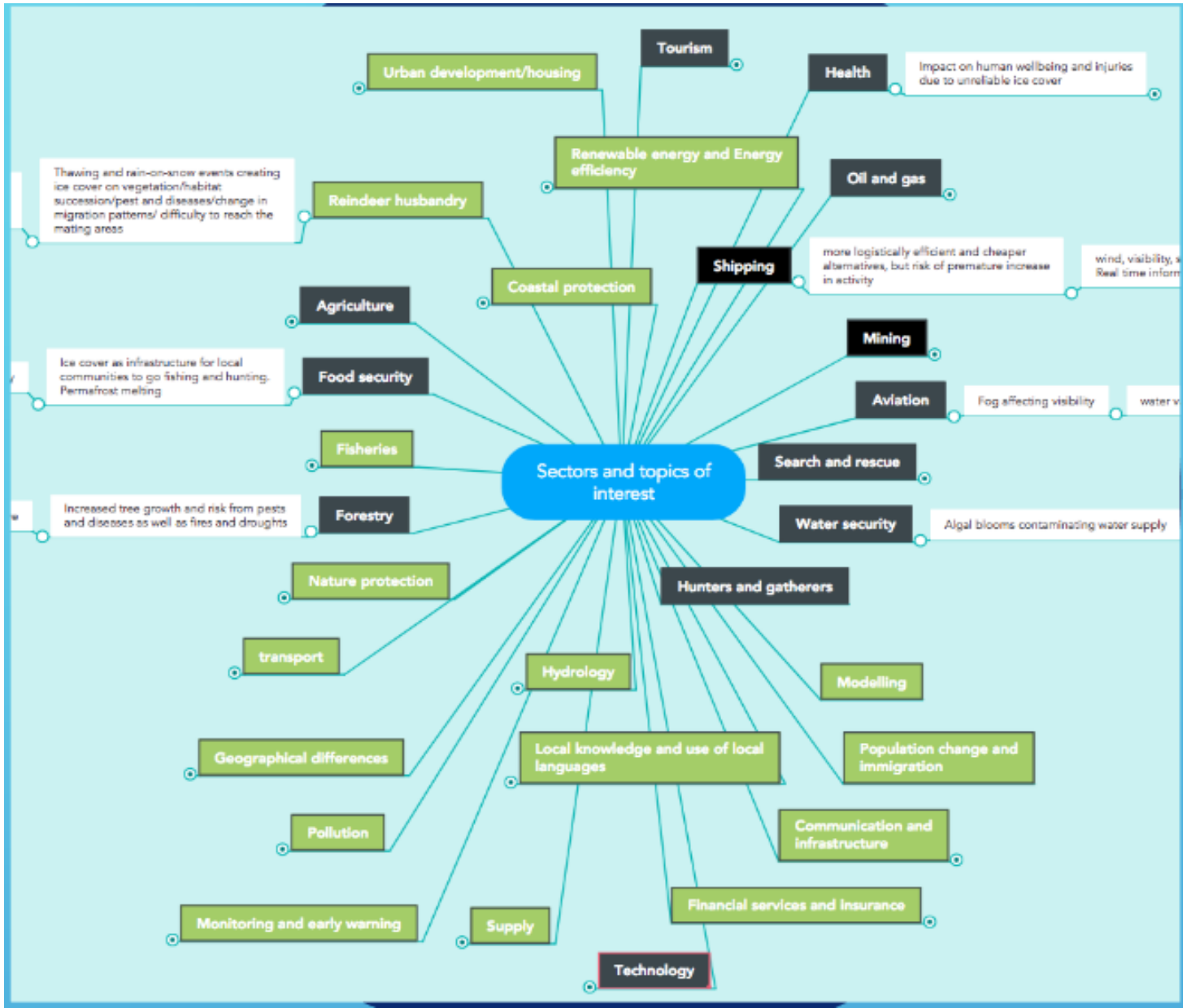
Setting up a User Group

- **Advantages:** a comprehensive view
- **Challenges:** find stakeholders, gender balance, sectoral & geographical coverage, equal contribution
- **Risks:** over-generalization, geographical bias

Mapping exercise

Findings

MAPPING EXERCISE



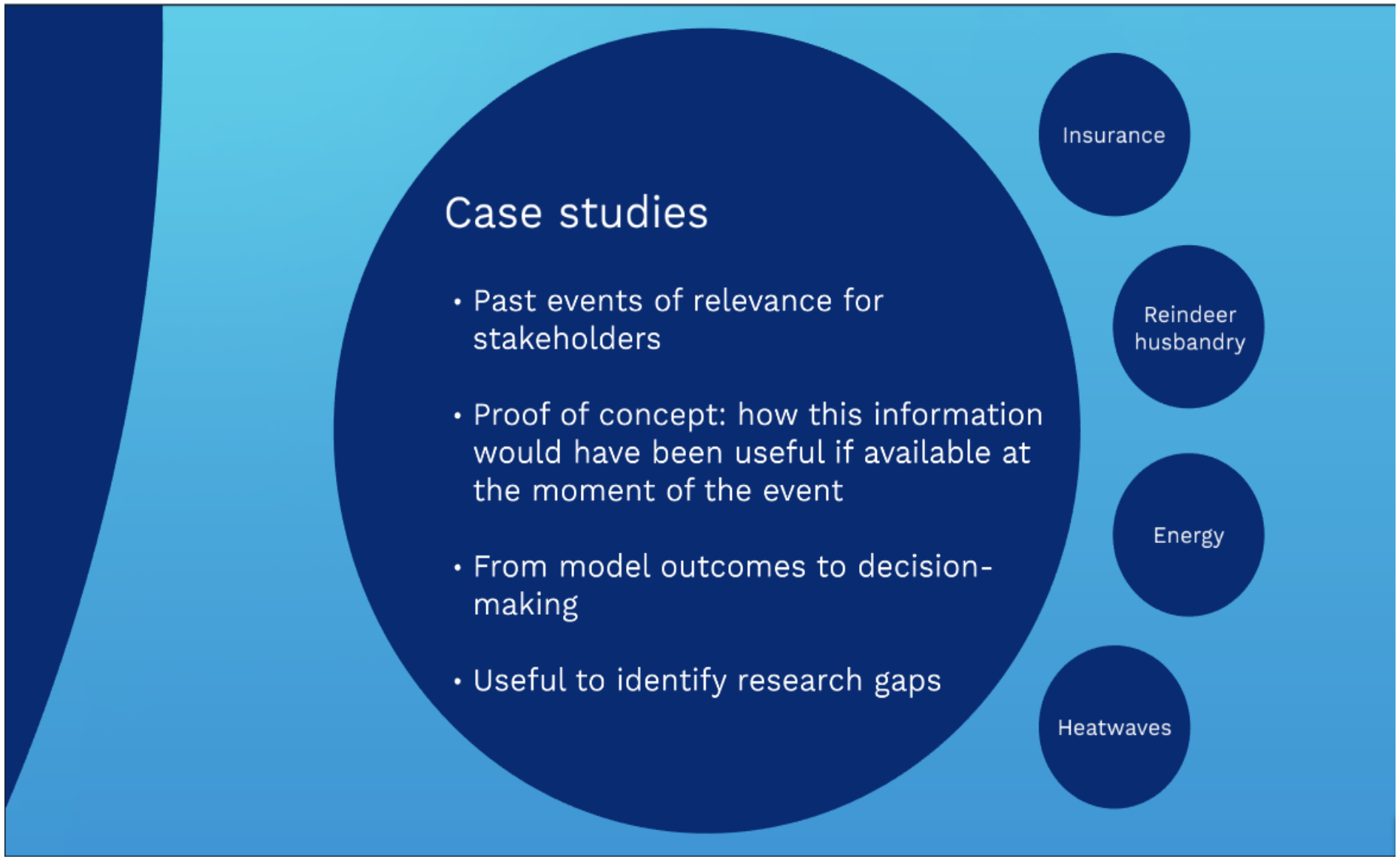
Main themes identified

- Use of weather and climate data
- Knowledge communication and integration
- Food security /Biodiversity
- Relevant economic sectors (transport and resupply, reindeer husbandry)
- Climate change and natural hazards
- Mid-latitude linkages

Bojovic and Terrado, 2018

Meetings and workshops

Workshop Improved safety and environmentally sound operations in the Arctic Ocean (Tromso, Jan 2019)


Case studies
• Past events of relevance for stakeholders
• Proof of concept: how this information would have been useful if available at the moment of the event
• From model outcomes to decision-making
• Useful to identify research gaps
Insurance
Reindeer husbandry
Energy
Heatwaves

Insurance

(case study to be defined)

- Extreme events (probabilities and return periods)
- Decadal predictions
- When will be starting to see catastrophic activity as consequence of sea ice decline?
- Uncertainty
- Increased frequency in the future

Reindeer husbandry

Basal ice formation in November 2006 and 2013 that prevented reindeer from feeding and resulted in high amounts of reindeer deaths in the Yamal Peninsula, northern Finland and Svalbard

Heatwaves

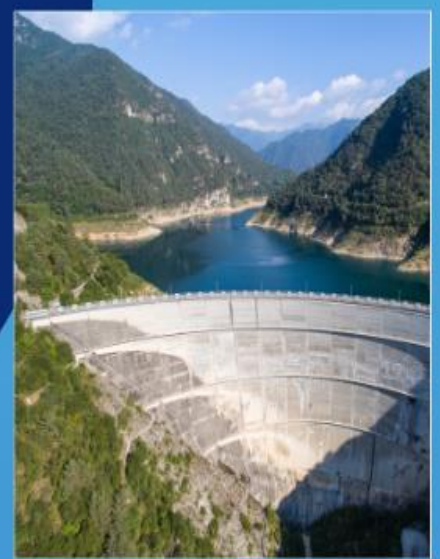
Arctic heatwave in July 2018 killed 70 people in Québec, Canada, and was responsible of 11 wildfires in the Arctic circle

Energy

Lowest sea ice concentration in the Barents and Kara seas for the period Nov-Dec 2016 - linked to the lowest precipitation on record in Europe.

A cold spell affected Europe in Jan 2017, increasing energy demand for heating. Low precipitation + wind drought decreased renewable energy supply.

Western Europe energy generation was affected (France faced a shortage due to planned maintenance in nuclear plants)



BLOG Polar Prediction Matters

https://blogs.helmholtz.de/polarpredictionmatters/

Launched in September 2017
Coordinated by the Year of Polar Prediction (YOPP)
with participation of APPLICATE and BLUE ACTION

Participate!

1. Read - there is a new article every month

2. Ask questions - the author is waiting for your doubts. It is an opportunity to know more!

3. Propose - do you know a stakeholder that could tell their story? let us know!

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